UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Electrification Administration
St. Louis, Missouri (2)

January 15, 1944

The Honorable
The Secretary of Agriculture

Dear Mr. Secretary:

It is indicated that the Federal Government now has on hand and, as the war progresses and eventually draws to a conclusion, will have on hand considerable quantities of surplus materials, supplies and equipment of which it will wish to dispose in a manner that will further rather than retard the re-adjustment of our national economy from war to peace. Making selected items of such surplus materials available for an intensified program of rural electrification development would seem to offer one of the best means of accomplishing that purpose. A detailed explanation and justification in behalf of such a use of government surplus materials is to be found in the "Estimate of Materials, Supplies and Equipment Required by REA Electric Cooperatives for Immediate Postwar Construction Program of Rural Electrification" a copy of which was submitted to you on December 18, 1943.

In order to facilitate a determination of the procedure required to put the plan into effect, we are herewith submitting the specific needs of four REA-financed electric cooperatives already in operation, for the construction of additional lines for which allotments have already have been made. These lists of requirements give at the same time a general indication of the kinds of materials, supplies and equipment of which REA-financed cooperatives are in need. A brief statement concerning each of these four systems follows.

The Coles-Moultrie Electric Cooperative of Mattoon, Illinois, (Illinois 8 Coles) operates about 600 miles of rural lines and is serving about 1600 farm families. Its present allotment calls for the construction of 247 additional miles of line to serve about 700 additional farm families.

The Swisher County Electric Cooperative, Inc., of Tulia, Texas, (Texas 108 Swisher) had its development seriously delayed because of the war. It operates 185 miles of line and serves slightly more than 200 farm families. Its present allotment calls for the construction of 175 additional miles of line to serve 273 more farm families.

The Three River Electric Cooperative of Linn, Missouri, (Missouri 45 Osage) operates about 300 miles of line and serves about 570 farm families. Its present allotment provides for the construction of 293 additional miles of line to serve 687 more farm families.

The Vigilante Electric Cooperative, Incorporated, of Twin Bridges, Montana, (Montana 10 Madison) operates 265 miles of line and serves about 600 farm families. Its present allotment provides for the construction of 264 additional miles of line to serve about 600 more farm families.

This statement of the immediate needs of these four systems for extension of rural electrification in order to satisfy an accumulated demand is merely a sampling of what exists all over the country. Even with regard to the particular systems mentioned it does not indicate the additional demands for farm electrification that will become apparent as soon as a broad program of rural line construction is again made possible.

The requirements of each of these four systems are grouped under four headings as follows:

1. Materials Required for Line Construction.
2. Materials Required for Farmstead Wiring.
3. Materials and Equipment Required for Farmstead Plumbing.
4. Supplies and Equipment Required for Line Maintenance and Office Management.

I shall deeply appreciate whatever support and assistance the Department of Agriculture and you personally will find it possible to give in helping us to establish a feasible procedure with the Army and Navy and other Federal agencies for obtaining suitable surplus materials, supplies and equipment, initially for these four projects and subsequently for other REA-financed rural electrification systems.

Sincerely,

/s/ William J. Neal

William J. Neal
Deputy Administrator

ESTIMATED REQUIREMENT

OF MATERIALS, SUPPLIES AND EQUIPMENT

By

COLES-MOULTRIE ELECTRIC COOPERATIVE

MATTOON, ILLINOIS

(Illinois 8 Coles)

For

Construction of 247 Miles of Electric Distribution

Lines to Serve Upward of 700 Farm Families

Tabulation attached for

1. Materials Required for Line Construction
2. Materials Required for Farmstead Wiring
3. Materials and Equipment Required for Farmstead Plumbing
4. Equipment and Supplies Required for Line Maintenance and Office Management

(Illinois 8 Coles)

1. Estimate of materials required for line construction:

Poles, S.Y.P.	Number
25-6	99
30-7	2,620
30-6	30
35-7	777
35-6	880
35-5	85
40-7	60
40-6	131
40-5	65
40-4	10
45-6	39
45-5	26
45-4	16
45-3	8
50-5	6
50-4	6
50-3	2
55-4	2
Crossarms	
3½" x 4½" x 8'	156
3½" x 4½" x 4'	424
3½" x 4½" x 8' (sidearms)	61
Transformers, Conventional, 7.2/12.45 Y to 220/110 V	
1½ KVA	49
3 KVA	327
5 KVA	45
7½ KVA	3
Conductors (feet)	
No. 2, Copper, 3 strand	5,600
6A, Copperweld copper	68,000
8A, Copperweld copper	900,000
3 No. 12, Copperweld	1,573,000
No. 6 Copper, S.D.	55,714
No. 4, T.B.W.P.	8,000
No. 6, T.B.W.P.	239,088
No. 8, T.B.W.P.	11,000
Guy Strand (feet)	
7/16 inch Siemens-Martin, 7 strand	14,250
3/8 inch Siemens-Martin, 7 strand	64,450
1/4 inch Siemens-Martin, 7 strand	2,800

(Illinois 8 Coles)

Insulators

	Number
Pin Type, 7.2/12.5 KV	4,608
Suspension, 7.2/12.5 KV	1,032

Hardware

Pole top pins, 15 ft.	3,973
Crossarm pins	633
Pole Bracket, primary	2
Machine Bolts, 5/8" to 14" in length	13,643
Square Washers, 2¼ x 2¼ x 3/16" hole	16,944
Single upset bolts, insulated	3,891
Deadend clevis, secondary, insulated	279
Eyebolt, 5/8 inch	1,016
Anchor Shackles	19
Angle assemblies, primary	19
Angle assemblies, neutral	19
Deadend assemblies, primary	497
Connectors	11,565
Deadend assemblies, neutral	497
Eye Nuts, 5/8 inch	100
Crossarm braces, 1¼" x 1/4" x 28"	736
Carriage bolts, 3/8" x 4½"	797
Lag Screws, 1/2" x 4"	870
Doublearm bolts, 5/8"	128
Sidearm braces, 1½" x 3/16" x 5'	61
Hot Line Clamps	528
Bonding Clamps, anchor rod	1,471
Guy Clamps, 3 bolt, 6"	3,140
Guy Attachments	184
Nuts, thimble eye	99
Bolts, thimble eye	99
Guy Hooks, J	194
Guy Plates, 4" x 8", 14 gage	194
Nails, 8 penny	2 (lb)
Metal Guy Guards, 8 ft.	365
Anchor rod, thimble eye, 5/8" x 7'	1,374
Anchor rod, thimble eye, 5/8" x 8'	97
Patent Anchors, 8,000 lb.	1,374
Patent Anchors, 10,000 lb.	97
Double Upset Bolts, insulated	529
Swinging Clevis, insulated	254
Wireholders	417
Service rack, 3 wire	15
Deadend Service Clevis, insulated	2,277
Ground rods, 5/8" x 8'	1,517
Ground rod clamps	1,517
Staples, 3/16" x 1½" - No. 9	1,275 (lb.)

Miscellaneous	Number
Creosoted planks, 3" x 12" x 3'	346
REA project signs, 4' x 6'	3
Lightning Arresters, 12.5 KV	424
Cutouts, single shot fuse, 7.2 KV	424

2. Estimate of Materials Required for Farmstead Wiring

1. CONDUCTOR - SINGLE

No. 6 Bare Copper, Medium Hard Drawn (Solid) M. Pounds	2.02
No. 6 Weatherproof Copper, Triple Braid, M. Pounds	23.63
No. 8 Weatherproof Copper, Triple Braid, M. Pounds	15.82
No. 6 DBRC Stranded Copper, M. Feet	53.27

2. CONDUCTOR - CABLE

No. 6 Three Conductor, SE Style U, Entrance Cable, M. Feet	35.15
No. 8/2 S.E. Style U, Entrance Cable, M. Feet	28.12
No. 14/2 R.C. Non-metallic Sheathed Cable, M. Feet	351.50
No. 14/3 R.C. Non-metallic Sheathed Cable, M. Feet	35.15
No. 12/2 R.C. Non-metallic Sheathed Cable, M. Feet	28.12

3. GROUNDING EQUIPMENT

Ground Rod, Copperweld ½" x 8' - 0", Units	2,812
Ground Rod, Copperweld 5/8" x 8' - 0", Units	703
Ground Clamp (T&B No. GF 14 or Equal), Units	2,812

4. CONDUIT - STEEL

1¼" Steel Conduit, Galvanized or Sheradized, M. Feet	1.06

5. CONDUIT AND CABLE FITTINGS

1¼" Pipe Straps, Units	2,109
Conduit Type Service Head, 1¼", 5 Hole, Units	703
Service Head, Cable Type 6/3 (T&B No. 5551 or Eq.). Units	703
Service Head, Cable Type 8/2 (T&B No. 5550 or Eq.). Units	2,812
Sill Plate, (T&B No. 2110 or Equal) Units	703
Cable Strap, (T&B No. 1341 or Equal) Units	2,109
Non-Weather tight connector (T&B No. 2009 or Equal). Units	703
Non-Weather tight connector (T&B No. 2006 or Equal). Units	2,812
Cable Clips, (T&B No. 91 or Equal). Pounds	352

6. SWITCHES AND CIRCUIT BREAKERS

Service Entrance Breaker Unit, 6 Circuit Heinmann or Equal. Units	703
Service Switch, 2 Circuit, 3 Pole, 2 Blade (Colt No. 8393 or Eq.)	1,406
Service Switch, 1 Circuit, 2 Pole, 1 Blade (Colt No. 8283 or Eq.)	1,406
Toggle Switches S/P (Bryant No. 3951 or Equal). Units	3,515
Toggle Switches 3P (Bryant No. 3953 or Equal). Units	1,406
Toggle Switches Plates, Bakelite Brown or Equal. Units	4,921

7. OUTLET BOXES AND FITTINGS

Outlet Boxes, 1½" x 4" Round, (National No. 2766G or Eq.). Units	8,436
Bar Hanger, (National No. 2263-L or Equal). Units	8,436
Outlet Boxes, 1-3/4" x 2-3/4" x 3" (National #7G or Eq.). Units	9,139

8. RECEPTACLES

Duplex Receptacles, (Bryant No. 4832 or Equal.) Units	4,218
Duplex Receptacle Plates, (Bakelite Brown or Equal. Units	4,218
Range Receptacle (Bryant No. 3826 or Equal). Units	703

9. LAMPHOLDERS AND FIXTURES

Yard Light (Benjamin No. 11212 or Equal). Units	703
Lamp Holder Cover (Bryant No. H-288 or Equal). Units	3,515
Dust Tight Fixture with Reflector (100 Watt) Complete. Units	703
Fixture, Bedroom 2 or 3, Light Canopy Type, Units	1,406
Fixture, Kitchen, 1 Light Canopy Type Milk White Globe. Units	703
Fixture, Dining Room, 3 to 5 Light, Canopy or Chain Type. Units	703
Fixture, Living Room, 3 to 5 Light, Canopy Type, Units	703
Fixture, Porch Type, Ceiling or Canopy Type, Units	1,406

10. LINE HARDWARE AND INSULATORS

Wire Holders (Pierce No. 1607 or Equal). Units	5,624
Service Racks (Pierce No. 1376 or Equal). Units	703

11. TAPE

Rubber and Friction Tape or Duplex, Pounds	2,106

12. SOLDER

Solder (Wire, Half and Half) Pounds	703

13. SCREWS

Screws 1½", No. 12 R.H. Galvanized, Gross	59

14. FUSES AND FUSE ADAPTERS

Fuses, Type S, (Plug) 15 Ampere. Units	3,515
Fuses, Type S, (Plug) 20 Ampere. Units	703
Fuses, Type S, (Plug) 30 Ampere. Units	703
Fuses, Cartridge (Non Renewable) 10 Ampere. Units	703
Fuses, Cartridge (Non Renewable) 15 Ampere. Units	703
Fuses, Cartridge (Non Renewable) 20 Ampere. Units	703
Fuses, Cartridge (Non Renewable) 30 Ampere. Units	703
Type "S", Fuse Adapters (Edison Base). Units. (15 Ampere)	2,812
Type "S", Fuse Adapters (Edison Base). Units. (20 Ampere)	703
Type "S", Fuse Adapters (Edison Base). Units. (30 Ampere)	703

3. Estimate of Materials and Equipment for Farmstead Plumbing

140	Pumps	complete with fittings		
35	Tubs	"	"	"
35	Lavatories	"	"	"
35	Closets	"	"	"
140	Sinks	"	"	"
35	Water Heaters	"	"	"
35	Showers	"	"	"
140	2" cleanout ferrule			
140	1½" x 4" x 24" increaser			
1050'	3" or 4" soil pipe			
35	stack base fitting with cleanout			
35	3" x 4" x 1½" or 4" x 4" x 1½" Tee			
35	4" x 16" closet bend			
35	4" x 2½" cast iron closet collar & bolts			
35	3" x 1½" or 4" x 1½" tapped sanitary cross			
35	"Y" branch 2" x 2"			
35	Spigot 2" x 1½"			
70	3" or 4" roof flashing			
1365#	calking lead			
140#	oakum			
625'	punched hanger iron			
35	1½" black plug			
1225'	1½" galv. waste pipe			
2450'	1¼" galv. pipe			
15750	3/4" galv. pipe			
5950	1" galv. pipe			
140	1½" black 45 degree ells.			
210	1½" black 90 degree ells.			
35	4 x 5 Drum trap tapped 1½"			
175	1½" galv. close nipples			
140	1½" galv. short nipples			
140	1½" galv. long nipples			
1400	½" galv. water pipe			
385	½" galv. Tees			
70	½" black plugs			
140	½" black caps			
105	½ x 3/8 galv. 90 degree ells.			
140	½" galv. close nipples			
420	½" galv. short nipples			
140	½" galv. long nipples			
700	½" galv. 90 degree ells.			
68	3/8" galv. close nipples			
87.5	2½ cubic yards concrete			
8750'	4" drain tile			

4. Estimate of Equipment and Supplies Required for Line Maintenance and Office Management:

A. For Line Maintenance

1. Trucks, Trailers and Equipment

Pole Lifting Spool	2
Trailers	1
Tripod	2
Trucks, ½ ton or jeep	1
Trucks, 3/4 ton	1
Trucks, 1½ ton	1
Winches	2

2. Compressors and Drilling Equipment and Tools

Compressors, Hand	1
Compressors, Truck Mounted	1
Rock Drills	50

3. Chains

Chains, Bonding Chains, etc., and sister hooks	200 lbs.

4. Wire Handling

Coffing Hoist, 3/4 ton	3
Cumalonge, Plain or Bronze, 1/0 or above	2
Cumalongs, Plain or Bronze, 1/0 or smaller	4
Grips	6
Payout Reel, Portable Barrel Type	3
Ship Augers, 11/16" x 18"	4
Slack Pullers	2
Wrenches, Armor Rod for No. 4, No. 2 and No. 1/0 - Set	2
Wrench Dies, Armor Rod for No. 4, No. 2 and No. 1/0 - Sets	2
Wrenches, ACSR Twisting for No. 4, No. 2 and No. 1/0 - Sets	2
Wrenches, Connector Sleeve for Copper Conductors No. 2, 4, 6 and 8 - Pairs	2

5. Clearing and Trimming

Axes	6
Bush Hooks	6
Saw, Cross Cut (2 men), 6'0"	2
Saw, Hand, 30"	3
Saw, Tree Trimming (curved)	3
Tree Trimmer	2

6. Miscellaneous and Body Tools

Bench Vise	2
Blow Torch	2
Brace and Bit Sets, 10"	3
Bolt Cutters	3
Chisel, Wood, 1"	6
Climbers, Belts	6
Climbers, Pairs	6
Climbers, Straps	6
Connectors (Splicing Clamps)	6
Drafting Sets	2
Folding Rule	6
Ground Rod Drivers	2
Hammers, Claw and Ball Pein	6
Hammer, Sledge, 6 pounds	4
Knife, Skinning	6
Ladders, Extension, Two 12' Sections	2
Meter Sealer Press	2
Pliers	6
Saw, Hack, and Blades	4
Soldering Iron	2
Tape, 100', 200', etc.	4
Wrench (Lineman's Leg Wrench)	6

7. Rope, Block and Tackle

Blocks, Snatch, 5"	4
Blocks, Double for Tackle	4
Blocks, Single Sheave for Hand Line, 3"	4
Rope, Manila, for Blocks and Hand Line	100 lbs.

8. Hot Line Tools and Equipment and Miscellaneous Protective Equipment

Auxiliary Crossarms	1
Boots	4
Glove Protectors, Pairs	6

8. Hot Line Tools and Equipment and Miscellaneous Protective Equipment

Grounding Clusters	2
Hot Line Cutters	2
Pole Saddles	1
Pole Tong Stirrup	1
Protector Bag for Gloves, Pairs	4
Raincoats	6
Rope Snubbing Bracket	1
Rubber Arm Protectors	2
Rubber Gloves	6
Sticks, Universal, with Necessary Adapter and Attachments	4
Tarpaulins	2
Tie Stick and Heads	2
Tong Saddles	2
Trouble Light and Battery	6
Wire Tongs	2
Wire Tong Band	1

9. First Aid Kit

First Aid Kits	6

10. Transits and Levels

Levels, Hand	1
Teleheight	1
Transits and Levels	1

11. Meters

Graphic Ammeter	3
Graphic Voltmeter	6
Indicator, Portable Ammeter	2
Indicator, Portable Voltmeter	2
Meggers (Ground Meter)	2
Radio Noise Locators	1
Tong Test Meters with Insulating Handles	2

12. Digging Tools

Anchor Augers	2
Crow Bars	6
Digging Bars and Spuds	8
Hole Diggers, Two Handle	4
Picks	4
Shovels, Long Handle	8
Shovels, Short Handle	8
Spoons, Long Handle	8
Tamping Bars	10

13. Pole Handling Tools

Cant Hooks	2
Carrying Hooks	4
Peavey	2
Pole Pulling Jack and Chain, 5 Ton	1
Pike Poles, 14'0"	8
Pike Poles, 16'0"	8
Pole Support (Jenny, Fork and Deadman)	2

B. Office Equipment and Supplies

1. Mechanical Equipment

Adding Machines	1
Addressing Machines	1
Billing Machines	1
Calculators	1
Duplicators	1
Fans, Portable	6
Fans, Ventilating	2
Typewriters	2

2. Furniture

Book Cases	2
Cabinets, Filing	4
Chairs, Executive - Swivel	2
Chairs, Posture - Steno	2
Chairs, Plain	8
Chairs, Folding	12
Desks, Executive	2
Desks, Stenographer	2
Safes	1
Tables, Office	2
Tables, Drafting	1

3. Office Accessories

Clip Boards	4
Extinguishers, Fire	6
Files, Visible	4
Lamps, Desk	4
Stapling Machines	2
Spring Binders, Metal	4

4. Stationery Supplies

Binders, Acco	1000
Binders, Ring	15
Binders, Post	4
Folders, File	2500
Linen, Tracing, Yards	50
Paper, Drafting, Rolls	2
Ribbon, Typewriter	12

ESTIMATED REQUIREMENT

OF MATERIALS, SUPPLIES AND EQUIPMENT

By

SWISHER COUNTY ELECTRIC COOPERATIVE, INC.

TULIA, TEXAS

(Texas 108 Swisher)

For

Construction of 175 Miles of Electric Distribution Lines to Serve Upward of 273 Farm Families

Tabulation attached for

1. Materials Required for Line Construction
2. Materials Required for Farmstead Wiring
3. Materials and Equipment Required for Farmstead Plumbing
4. Equipment and Supplies Required for Line Maintenance and Office Management

(Texas 108 Swisher)

1. Estimate of Materials Required for Line Construction

REA Item	Inventory of Material Needed	Quantity
a	Insulator, Pin Type, 7200-V	1817
b	Pin, Pole Top, 15 inch	1757
c	Bolt, Machine 5/8", 8-12 inch	4217
d	Washer, Square, 2¼x2¼x3/16"	12,336
e	Washer, anchor, 4 x 4 x ½	350
f	Pin, Steel Crossarm, 5/8 x 10¼"	112
g	Crossarm 3½ x 4½ x 8'0"	82
h	Crossarm Brace, 1¼ x 1¼ x 28"	164
i	Bolt, Carriage 3/8" x 4½"	164
j	Lag Screw, ½" x 4"	82
k	Insulator, Suspension	692
l	Clamp, Deadend	226
m	Clamp, Suspension ACSR	122
n	Bolt, Double Arming, 5/8" x 14"-18"	52
o	Bolt, Eye 5/8" x 10"-16"	681
p	Connector, Solderless, AL to AL	3438
P1	Connector, Solderless, #6 Cu. to #6 Cu.	2800
P2	Connector, Solderless, #6 Cu. to #4 ACSR	2000
q	Bolt, D. U. insulated	325
s	Clevis, Sec. Sw. Insulated	498
u	Clamp, Guy, 3-bolt x 6"	806
v	Guy Attachment	313
x	Anchor Rod, 5/8 x 7'	340
x'	Anchor Rod, 3/4 x 8', Double eye	340
y	Guy Wire, ¼"	1000'
y'	Guy Wire, 3/8"	16,000'
z	Anchor, 6,000 lbs., 8" x 4' log	340
z'	Anchor, 8,000 lbs.,10" x 5' log	340
aa	Eye Nut - 5/8"	167
ab	Thimble eye nut	70
ai	Rod, Ground, 5/8 x 8'	235
aj	Clamp, Ground rod	235
al	Staples, Ground Wire	1000 lbs.
ao	Bolt, Thimble eye, 5/8 x 8"-14"	70
ap	Clamp, hot line to ACSR	340
ar	Wire Holder	1200
av	Conductor - #4 ACSR 7/1	2,035,000'
#8	TBWP	49,000'
#6	TBWP	51,000'
#6	S. D.	12,060'
be	Oil Circuit Breaker, GE-FP-119	6
bi	Neutral crossarm pin	52
bj	Guy Hook, ("J")	40

REA Item	Inventory of Material Needed	Quantity
bk	Guy Plate	40
bo	Shackle, Anchor	5
bp	Nails, 10 penny	5 lbs.
bq	Metal Gain, 4½"	82
bs	Bolt, S. U. insulated	1920
ck	Clamp, Anchor Rod Bond	333
cx	Sleeve, single oval	1000
Cat. #1124	Armor Rods	1500
Cat. 1154	Armor Rods	500
Cat. 1103	Armor Rod Clips	4000
	Armor Tape	3300'
	Al. Tie Wire	12,500'
	GE Secondary fuse	250
	GE Secondary Fuse Links	250
	#8 Copper house end connector	400'
	##6 Copper house end connector	350'
	120-V. 2-wire meter and base	200
	120-240-V. 3-wire meter and base	100

Poles	Quantity
25-7	42
30-6	18
30-7	240
35-5	2
35-6	401
35-7	1312
40-5	1
40-6	101
45-5	2
45-6	1
50-5	1

(Alternate No. 1 - Transformers)

(a) Substitute conventional for Gap transformers
(b) Add one lightning arrester per transformer.
(c) Add one single shot cutout per transformer.
(d) Add one fuse link per transformer.

Deduct from Material List:

(a) One secondary cutout per gap transformer.
(b) One secondary fuse per gap transformer.

(Alternate No. 2)

(a) Substitute completely self-protected transformers for gap transformers.

Deduct from Material List:

(a) One secondary cutout per gap transformer.
(b) One secondary fuse per gap transformer.

2. Estimate of Materials Required for Farmstead Wiring

1. CONDUCTOR - SINGLE

No. 6 Bare Copper, Medium Hard Drawn (Solid M. Pounds	0.79
No. 6 Weatherproof Copper, Triple Braid M. Pounds	12.54
No. 8 Weatherproof Copper, Triple Braid, M. Pounds	8.40
No. 6 DBRC Stranded Copper, M. Feet	24.57

2. CONDUCTOR - CABLE

No. 6 Three Conductor, SE Style U, Entrance Cable, M. Feet	13.65
No. 8/2 S.E. Style U, Entrance Cable. M. Feet	10.92
No. 14/2 R. C. Non-metallic Sheathed Cable, M. Feet	136.50
No. 14/3 R. C. Non-metallic Sheathed Cable, M. Feet	13.65
No. 12/2 R. C. Non-metallic Sheathed Cable, M. Feet	10.92

3. GROUNDING EQUIPMENT

Ground Rod, Copperweld ½" x 8' - 0". Units	1,092
Ground Rod, Copperweld 5/8" x 8' - 0". Units	273
Ground Clamp (T&B No. GF 14 or Equal). Units	1,092

4. CONDUIT - STEEL

1¼" Steel Conduit, Galvanized or Sherardized. M. Feet	4.10

5. CONDUIT - AND CABLE FITTINGS

1¼" Pipe Straps. Units	819
Conduit Type Service Head, 1¼", 5 hold Units	273
Service Head, Cable Type 6/3 (T&B No. 5551 or Equal).Units	273
Service Head, Cable Type 8/2 (T&B No. 5550 or Equal), Units	1,092
Sill Plate, (T&B No. 2110 or Equal). Units	273
Cable Strap, (T&B No. 1341 or Equal). Units	819
Non-Weather tight Connector (T&B No. 2009 or Equal.) Units	273
Non-Weather tight Connector (T&B No. 2006 or Equal.) Units	1,092
Cable Clips, (T&B No. 91 or Equal). Pounds	137

6. SWITCHES AND CIRCUIT BREAKERS

Service Entrance Breaker Unit, 6 cir. Heinmannor Equal Units	273
Service Switch, 2 circuit, 3 pole, 2 blade, (Colt No. 8393 or Equal	546
Service Switch, 1 circuit, 2 pole, 1 blade, (Colt No. 8283 or Equal	546
Toggle Switches S/P (Bryant No. 3951 or Equal). Units	1,365
Toggle Switches 3P (Bryant No. 3953 or Equal). Units	546
Toggle Switches Plates, (Bakelite Brown or Equal). Units	1,911

7. OUTLET BOXES AND FITTINGS

Outlet Boxes, 1½" x 4" Round, (National No. 2766G or [illegible]	3,276
Bar Hanger, (National No. 2263-L or Equal). Units	3,276
Outlet Boxes, 1-3/4" x 2-3/4" x 3" (National #7G or Equal)U	3,549

8. RECEPTACLES

Duplex Receptacles, Bryant No. 4832 or Equal. Units	1,638
Duplex Receptacles, Plates, Bakelite Brown or Equal. Units	1,638
Range Receptacle (Bryant No. 3826 or Equal). Units	273

9. LAMPHOLDERS AND FIXTURES

Yard Light (Benjamin No. 11212 or Equal). Units	273
Lamp Holder Cover (Bryant No. H-288 or Equal). Units	1,365
Dust Tight Fixture with Reflector (100 Watt) Complete, Units	273
Fixture, Bedroom 2 or 3, Light Canopy Type, Units	546
Fixture, Kitchen, 1 Light Canopy Type Milk White Globe, Units	273
Fixture, Dining Room, 3 to 5 Light, Canopy or Chain Type Units	273
Fixture, Living Room, 3 to 5 Light, Canopy Type, Units	273
Fixture, Porch Type, Ceiling or Canopy Type. Units	546

10. LINE HARDWARE AND INSULATORS

Wire Holders, (Pierce No. 1607 or Equal). Units	2,184
Service Racks, (Pierce No. 1376 or Equal). Units	273

11. TAPE

Rubber and Friction Tape or Duplex. Pounds	819

12. SOLDER

Solder (Wire, Half and Half). Pounds	273

13. SCREWS

Screws 1½", No. 12 R.H. Galvanized, Gross	23

14. FUSES AND FUSE ADAPTERS

Fuses, Type S, (Plug) 15 Ampere, Units	1,365
Fuses, Type S, (Plug) 20 Ampere, Units	273
Fuses, Type S, (Plug) 30 Ampere, Units	273
Fuses, Cartridge (Non Renewable) 10 Ampere. Units	273
Fuses, Cartridge (Non Renewable) 15 Ampere, Units	273
Fuses, Cartridge (Non Renewable) 20 Ampere. Units	273
Fuses, Cartridge (Non Renewable) 30 Ampere. Units	273
Type "S", Fuse Adapters (Edison Base). Units (15 Ampere)	1,092
Type "S", Fuse Adapters (Edison Base). Units (20 Ampere)	273
Type "S", Fuse Adapters (Edison Base). Units (30 Ampere)	273

(Texas 108 Swisher)

3. Estimate of Materials and Equipment for Farmstead Plumbing

55	Pumps	Complete	with	fittings
14	Tubs	"	"	"
14	Lavatories	"	"	"
55	Closets	"	"	"
14	Sinks	"	"	"
14	Water heaters	"	"	"
41	Showers	"	"	"

41	2" cleanout ferrule
41	1½" x 4" x 24" increaser
420'	3" or 4" soil pipe
14	stack base fitting with cleanout
14	3" x 4" x 1½" or 4" x 4" x 1½" Tee
14	4" x 16" closet bend
14	4" x 2½" cast iron closet collar & bolts
14	3" x 1½" or 4" x 1½" tapped sanitary cross
14	"y" branch 2" x 2"
14	Spigot 2" x 1½"
28	3" or 4" roof flashing
546#	caulking lead
56#	oakum
210'	punched hanger iron
14	1½" black plug
490	1½" Galv. waste pipe
980'	1¼" Galv. pipe
6300'	3/4" galv. pipe
2380'	1" galv. pipe
56	1½" black 45 degree ells.
84	1½" black 90 degree ells.
14	4x5 Drum trap tapped 1½"
70	1½" galv. close nipples
42	1½" galv. short nipples
42	1½" galv. long nipples
560'	½" galv. water pipe
154	½" galv. Tees
28	½" Black plugs
56	½" Black caps
42	½x3/8 galv. 90 degree ells.
56	½ galv. close nipples
168	½" galv. short nipples
56	½" galv. long nipples
280	½" galv. 90 degree ells
28	3/8" galv. close nipples
35	2½ cubic yards concrete
3500'	4" drain tile

ESTIMATED REQUIREMENT

OF MATERIALS, SUPPLIES AND EQUIPMENT

By

THREE RIVER ELECTRIC COOPERATIVE
Linn, Missouri
(Missouri 45 Osage)

For

Construction of 293 Miles of Electric Distribution

Lines to Serve Upward of 687 Farm Families

Tabulation attached for

1. Materials Required for Line Construction
2. Materials Required for Farmstead Wiring
3. Materials and Equipment Required for Farmstead Plumbing
4. Equipment and Supplies Required for Line Maintenance and Office Management

(Missouri 45 Osage)

1. Estimate of materials required for line construction:

Item*	Material	No. of Units
a	Insulators, pin	5287
b	Pins, pole top	3867
c	Bolts, machine, 5/8 x 8-10-12-14-16	11340
d	Washers, square	18014
f	Pins, crossarm, steel	1350
g	Crossarms	1090
h	Braces, crossarm	1575
i	Bolts, carriage	1621
j	Screws, lag	1136
k	Insulators, suspension	1887
l	Clamps, deadend	1617
m	Clamps, suspension	262
n	Bolts, double arming	359
o	Bolts, eye	1577
p	Connectors, solderless	18139
q	Bolts, double upset, insulated	430
r	Clevis, secondary deadend, insulated, Clevis	235
s	Clevis, secondary swinging, insulated, Clevis	148
u	Clamps, guy:	
	Three-bolt 6" MD	3866
	Three-bolt 6" HD	460
v	Guy attachment	1800
x	Rods, anchor:	
	Thimbleye, 5/8" x 7'	1700
	Thimbleye, 3/4" x 8'	225
	Twin Thimbleye, 3/4" x 8'	88
y	Guy wire:	
	3/8"	106 M Ft.
	7/16"	16 M Ft.
z	Anchors:	
	Log	8
	Expanding, 6,000 lb.	720
	Expanding, 8,000 lb.	1060
	Expanding, 10,000 lb.	225
aa	Nuts, eye	450
ab	Nuts, thimbleye	125
ac	Braces, sidearm diagonal	46
ae	Lightning arresters	513
af	Cutouts, fuse, single-shot	513
ai	Rods, ground	815
aj	Clamps, ground rod	815
al	Staples, ground wire	58 cwt.
an	Transformers - Conventional:	
	1½-Kv.-a.	190
	3-Kv.-a.	310

Item*	Material	No. of Units
an	Transformers - Conventional: (Continued)	
	5-Kv.-a.	10
	7½-Kv.-a.	3
ao	Bolts, Thimbleye	125
ap	Clamps, hot line	732
ar	Wireholders	580
as	Clevis, service swinging insulated:	
	Clevis	2463
	Insulator	2463
at	Guy guards	80
au	Poles, Southern yellow pine	
	25-7	135
	30-7	585
	30-6	10
	30-5	5
	35-7	2520
	35-6	880
	35-5	18
	35-4	5
	40-6	430
	40-5	57
	40-4	4
	45-6	155
	45-5	7
	45-4	2
	50-5	58
	50-4	2
	55-5	20
	55-4	2
	60-4	4
av	Conductors:	
	#4 HD Copper	7000'
	#4A CWC	8000'
	#6A CWC	391000'
	#8A CWC	2731000'
	#8 W.P.	62000'
	#6 W.P.	160000'
	#6 S.D. Copper	158000'
bc	Brackets, Pole, primary	70
be	Breakers, circuit:	
	Automatic oil	15
bj	Guy hooks, J	476
bk	Guy plates	476
bl	Thimbles, deadend	400
bo	Shackles, anchor	105
bp	Nails, 8-penny	100 lbs.

(Missouri 45 Osage)

Item*	Material	No. of Units
bs	Bolts, single upset, insulated	3373
cd	Angle assemblies, primary	91
ce	Angle assemblies, neutral and secondary	91
ck	Clamp, anchor rod, bonding	2013
cz	Sleeve, splicing, double tube:	
	#4 HD Copper	15
	#4A CWC	15
	#6A CWC	400
	#8A CWC	2800

* Refer to REA list of approved materials.

(Missouri 45 Osage)

2. Estimate of Materials required for Farmstead Wiring:

1. CONDUCTOR - SINGLE

No. 6 Bare Copper, Medium Hard Drawn (Solid) M. Pounds	1.97
No. 6 Weatherproof Copper, Triple Braid, M. Pounds	23.09
No. 8 Weatherproof Copper, Triple Braid, M. Pounds	15.46
No. 6 DBRC Stranded Copper, M. Feet	61.83

2. CONDUCTOR - CABLE

No. 6 Three Conductor, SE Style U, Entrance Cable, M. Feet	34.35
No. 8/2 SE Style U, Entrance Cable, M. Feet	27.48
No. 14/2 RC Non-metallic Sheathed Cable, M. Feet	343.50
No. 14/3 RC Non-metallic Sheathed Cable, M. Feet	34.35
No. 12/2 RC Non-metallic Sheathed Cable, M. Feet	27.48

3. GROUNDING EQUIPMENT

Ground Rod, Copperweld 1/2" x 8' - 0". Units	2,748
Ground Rod, Copperweld 5/8" x 8' - 0". Units	687
Ground Clamp (T&B No. GF 14 or Equal). Units	2,748

4. CONDUIT - STEEL

1¼" Steel Conduit, Galvanized or Sheradized. M. Feet	1.10

5. CONDUIT AND CABLE FITTINGS

1¼" Pipe Straps. Units	2,061
Conduit Type Service Head, 1¼", 5 Hole. Units	687
Service Head, Cable Type 6/3 (T&B No. 5551 or Equal) Units	687
Service Head, Cable Type 8/2 (T&B No. 5550 or Equal Units	2,748
Sill Plate, (T&B No. 2110 or Equal) Units	687
Cable Strap, (T&B No. 1341 or Equal) Units	2,061
Non-Weather tight connector (T&B No. 2009 or Equal Units	687
Non-Weather tight connector (T&B No. 2006 or Equal) Units	2,748
Cable Clips, (T&B No. 91 or Equal) Pounds	344

6. SWITCHES AND CIRCUIT BREAKERS

Service Entrance Breaker Unit, 6 Circuit Heinemann or Equal Unit	687
Service Switch, 2 Circuit, 3 Pole, 2 Blade, (Colt No. 8393 or Equal)	1,374
Service Switch, 1 Circuit, 2 Pole, 1 Blade, (Colt No. 8283 or Equal)	1,374
Toggle Switches S/P (Bryant No. 3951 or Equal Units	3,435
Toggle Switches 3P (Bryant No. 3953 or Equal) Units	1,374
Toggle Switches Plates, Bakelite Brown or Equal Units	4,809

7. OUTLET BOXES AND FITTINGS

Outlet Boxes, 1½" x 4" Round, (National No. 2766G or Equal) Units	8,244

7. OUTLET BOXES AND FITTINGS (Continued)

Bar Hanger, (National No. 2263-L or Equal) Units	8,244
Outlet Boxes, 1-3/4" x 2-3/4" x 3" (National No. 7G or Equal) Units	8,931

8. RECEPTACLES

Duplex Receptacles, Bryant No. 4832 or Equal Units	4,122
Duplex Receptacle Plates, Bakelite Brown or Equal Units	4,122
Range Receptacle (Bryant No. 3826 or Equal) Units	687

9. LAMPHOLDERS AND FIXTURES

Yard Light (Benjamin No. 11212 or Equal Units	687
Lamp Holder Cover (Bryant No. H-288 or Equal) Units	3,435
Dust Tight Fixture with Reflector (100 Watt) Complete Units	687
Fixture, Bedroom 2 or 3, Light Canopy Type, Units	1,374
Fixture, Kitchen, 1 Light Canopy Type Milk White Globe, Units	687
Fixture, Dining Room, 3 to 5 Light, Canopy or Chain Type, Units	687
Fixture, Living Room, 3 to 5 Light, Canopy Type, Units	687
Fixture, Porch Type, Ceiling or Canopy Type, Units	1,374

10. LINE HARDWARE AND INSULATORS

Wire Holders, (Pierce No. 1607 or Equal) Units	5,496
Service Racks, (Pierce No. 1376 or Equal) Units	687

11. TAPE

Rubber and Friction Tape or Duplex, Pounds	2,061

12. SOLDER

Solder (Wire, Half and Half) Pounds	687

13. SCREWS

Screws 1½", No. 12 R. H. Galvanized, Gross	58

14. FUSES AND FUSE ADAPTERS

Fuses, Type S, (Plug) 15 Ampere, Units	3,435
Fuses, Type S, (Plug) 20 Ampere, Units	687
Fuses, Type S, (Plug) 30 Ampere, Units	687
Fuses, Cartridge (Non Renewable) 10 Ampere, Units	687
Fuses, Cartridge (Non Renewable) 15 Ampere, Units	687
Fuses, Cartridge (Non Renewable) 20 Ampere, Units	687
Fuses, Cartridge (Non Renewable) 30 Ampere, Units	687
Type "S", Fuse Adapters (Edison Base), Units (15 Ampere)	2,748
Type "S", Fuse Adapters (Edison Base), Units (20 Ampere)	687
Type "S", Fuse Adapters (Edison Base), Units (30 Ampere)	687

(Missouri 45 Osage)

3. Estimate of Materials and Equipment for Farmstead Plumbing:

137	Pumps, complete with fittings
34	Tubs, complete with fittings
34	Lavatories, complete with fittings
34	Closets, complete with fittings
137	Sinks, complete with fittings
34	Water heaters, complete with fittings
34	Showers, complete with fittings
137	2" Cleanout ferrule
137	1½" x 4" x 24" increaser
1020'	3" or 4" soil pipe
34	Stack base fitting with cleanout
34	3" x 4" x 1½" or 4" x 4" x 1½" Tee
34	4" x 16" Closet bend
34	4" x 2½" cast iron closet collar and bolts
34	3" x 1½" or 4" x 1½" tapped sanitary cross
34	"Y" branch 2" x 2"
34	Spigot 2" x 1½"
68	3" or 4" roof flashing
1326#	caulking lead
156#	Oakum
510'	punched hanger iron
34	1½" black plug
1190'	1½" Galv. waste pipe
2380'	1¼" Galv. pipe
15300'	3/4" Galv. pipe
5780'	1" Galv. pipe
156	1½" black 45 degree ells
208	1½" black 90 degree ells
34	4x5 Drum trap tapped 1½"
170	1½" Galv. close nipples
102	1½" Galv. short nipples
102	1½" Galv. long nipples
1560'	1/2" Galv. water pipe
374	1/2" Galv. Tees
68	1/2" black plugs
156	1/2" black caps
102	1/2 x 3/8 Galv. 90 degree ells
156	1/2" Galv. close nipples
408	1/2" Galv. short nipples
156	1/2" Galv. long nipples
680	1/2" Galv. 90 degree ells
68	3/8" Galv. close nipples
88	2½ cubic yards concrete
8500'	4" drain tile

4. Estimate of Equipment and Supplies required for Line Maintenance and Office Management:

A. For Line Maintenance:

1. Trucks, Trailers and Equipment

Pole Lifting Spools	2
Trailers	1
Tripods	2
Trucks, 3/4 Ton	1
Trucks, 1½ Ton	1
Winches	1

2. Compressors, Hand

Rock Drills	24

3. Chains

Chains, Bonding Chains, etc., and Sister Hooks	100 lbs.

4. Wire Handling

Geffing Hoist, 3/4 Ton	2
Cumulongs, Plain or Bronze	
1/0 or above	2
1/0 or smaller	2
Haven Grips	4
Payout Reel, Portable Barrel Type	2
Ship Augers 11/16" x 18"	2
Slack Pullers	2
Wrenches, Connector Sleeve for Copper Conductors #2, 4, 6, 8 and 104, Pairs	2

5. Clearing and Trimming

Axes	4
Bush Hooks	4
Saw, Cross Cut (2 man) 6'0"	2
Saw, Hand, 30"	2
Saw, Tree Trimming, Curved	2
Tree Trimmer	2

6. Miscellaneous and Body Tools

Bench Vise	2
Blow Torch	2
Brace and Bit Sets - 10"	2
Bolt Cutters	2
Chisel, Wood, 1"	4
Climbers, Belts	4
Climbers, Pairs	4
Climbers, Straps	4
Connectors (Splicing Clamps)	12

6. Miscellaneous and Body Tools (Continued)

Drafting Sets	1
Folding Rules	4
Ground Rod Drivers	2
Hammers, Claw & Ballpein	8
Hammers, Sledge, 6 lb.	2
Knife, Skinning	6
Ladders, extension 2-12' sections	2
Meter Sealer Press	2
Pliers	6
Saw, Hack and Blades	2
Soldering Iron	2
Tape, 100'	2
Wrench (Lineman's Lay Wrench)	4

7. Rope, Block and Tackle

Blocks, Snatch 5"	4
Blocks, Double for Tackle	4
Blocks, Single Sheave for Hand Line, 3"	4
Rope, Manila, for Blocks and Hand Line	50 lbs.

8. Hot Line Tools and Equipment and Miscellaneous Protective Equipment

Auxiliary Cross Arms	1
Boots	4
Glove Protectors, Prs.	8
Grounding Clusters	2
Hot Line Cutters	2
Pole Saddles	1
Pole Tong Stirrup	1
Protector Bag for Gloves, Prs.	8
Raincoats	4
Rope Snubbing Bracket	1
Sticks, Universal, with necessary adapter and attachments	4
Tarpaulins	4
Tie Stick and Heads	1
Tong Saddles	2
Trouble Light and Battery	4
Wire Tongs	2
Wire Tong Band	1

9. First Aid Kit

First Aid Kits	5

10. Transits and Levels

Levels, Hand	1
Teleheight	1
Transit	1

11. Meters

Graphic Ammeter	1
Graphic Voltmeter	3
Indicator, Portable Ammeter	4
Indicator, Portable Voltmeter	3
Meggers (Ground Meter)	1
Radio Noise Locators	2
Tong Test Meters with Ins. Handles	3

12. Digging Tools

Anchor Augers	2
Crow Bars	4
Digging Bars and Spuds	4
Hole Diggers, 2 handle	2
Picks	4
Pole Cans	1
Shovels, Long handle	4
Shovels, short handle	4
Spoons, long handle	4
Tamping Bars	4

13. Pole Handling Tools

Cant Hooks	2
Carrying Hooks	4
Peavey	2
Pole Pulling Jack & Chain, 5 Ton	2
Pike Poles, 14'	6
Pike Poles, 16'	6
Pole Support (2 leg)	2

B. Office Equipment and Supplies:

1. Mechanical Equipment

Adding Machines	1
Addressing Machines	1
Billing Machines	1
Calculator	1
Coolers, Water (Electric)	1
Duplicator	1
Fans, Portable	4
Typewriters	1

2. Furniture

Book Cases	2
Cabinets, Filing	3
Chairs, Executive, Swivel	1
Chairs, Posture, Steno	1
Chairs, Arm	6

2. Furniture (Continued)

Chairs, Plain	6
Chairs, Folding	12
Desk, Executive	1
Desk, Stenographer	1
Stool, Drafting	1
Safe	1
Table, Office	1
Table, Drafting	1

3. Office Accessories

Baskets, Waste	6
Buzzer Signal System	1
Calendar Pad Holders	12
Clothes Trees	2
Clip Boards	4
Dating Machines	2
Extinguishers, Fire	4
Files, Visible	2
Lamps, Desk	2
Lamps, Floor	3
Lockers, Storage	2
Lockers, Clothing	2
Pads, Desk Blotter	8
Pens, Desk Sets	2
Punches, 2 Hole	2
Punches, 3 Hole	1
Removers, Staple	2
Stapling Machines	3
Sharpeners, Pencil	2
Spring Binders, Metal	4
Scissors	3
Trays, File	6
Weights, Paper	12

4. Stationery Supplies

Binders, Acco	1200
Binders, Ring	12
Binders, Post	4
Blotters, Desk	12 doz.
Bands, Rubber	1 lb.
Cement, Rubber	2 pts.
Clips, Paper	3 lbs.
Eradicator, Ink	2
Erasers	12
Folders, File	2000
Glue, Tubes	2
Ink, Drafting, Bottles	3
Ink, Writing, Bottles	12
Linen, Tracing, Yards	60

4. Stationery Supplies (Continued)

Mucilage, Bottles	2
Pins, Colored, Map, Boxes, Asst.	12
Paste, Bottles	2
Pads, Stamp	4
Pads, Scratch	100
Pencils, Plain, Dozen	12
Pencils, Colored, Assorted, Boxes	3
Paper, Bond, Reams	12
Paper, Tissue, Typewriting, Reams	34
Paper, Carbon, Boxes	6
Paper, Drafting, Rolls	1
Paper, Mimeograph, Reams	100
Ribbons, Typewriter	6
Signals, File Card, Assorted Boxes	6
Stencils, Mimeograph, Boxes	6
Tacks, Thumb, Boxes	1
Tape, Scotch gummed, Dozen	3

ESTIMATED REQUIREMENT

OF MATERIALS, SUPPLIES AND EQUIPMENT

By

VIGILANTE ELECTRIC COOPERATIVE, INC.

Dillion, Montana

(Montana 10 Madison)

For

Construction of 264 Miles of Electric Distribution

Lines to Serve Upward of 600 Farm Families

Tabulation attached for

1. Materials Required for Line Construction
2. Materials Required for Farmstead Wiring
3. Materials and Equipment Required for Farmstead Plumbing
4. Equipment and Supplies Required for Line Maintenance and Office Management

(Montana 10 Madison)

1. Estimate of materials required for line construction:

Item No.		Quantity
au	Poles	
	25-7	
	25-6	185
	30-7	6
	30-6	300
	30-5	26
	35-7	4
	35-6	1,585
	35-5	891
	35-4	25
	40-6	8
	40-4	274
	40-3	17
	45-6	2
	45-4	47
	45-3	10
	50-5	2
	50-4	8
	50-3	7
	55-3	4
	60-3	2
g	Crossarms (ASA Standards, AWPA specifications) $3\frac{1}{2}$ x $4\frac{1}{2}$ x 8'	2
av	Conductors	271
	No. 4 B & S Gauge Solid HD Copper	285,000 Ft.
	No. 6 " " " " " "	311,000 "
	Copperweld Copper #6 Equivalent Conductivity	10,000 "
	Copperweld Copper #8 Equivalent Conductivity	720,000 "
	Copperweld Copper #$9\frac{1}{2}$ Equivalent Conductivity	1,150,000 "
	#4 TBWP	2,000 "
	#6 TBWP	115,000
	#8 TBWP	51,000 "
	#6 Bare SD Copper	58,000 "
y	Guy Strand (Siemens-Martin)	
	$\frac{1}{4}$"	2,065 Lbs.
	3/8"	10,000 "
	7/16"	6,000 "
an	Transformers (4400/240/Volt) for 4.4KV Delta	
	$1\frac{1}{2}$ KVA	6
	3 KVA	4
	5 KVA	1

Item No.	Material	Quantity
	Transformers (7200/240/120 Volt) (for 12.47 KV, Wye)	
	Conventional with internal primary fuse	
	1½ KVA	133
	3 KVA	113
	5 KVA	17
	7½ KVA	7
	10 KVA	3
	Transformers (7200/240/120 Volt) (for 12.47 KV, Wye)	
	Entirely self-protected	
	1½ KVA	4
	3 KVA	5
	5 KVA	2
	7½ KVA	1
	10 KVA	1
ae	Lightning Arresters (712/12.5 KV, Wye)	12
af	Lightning Arresters (3/6 KV)	24
	Cutout (Single Shot, Fused, open type, 7.2/12.5 KV Wye)	20
ag	Cutout (Single Shot, Fused, open type, 3/6 KV Delta	24
bs	Cutout (3 shot, fuse, 7.2/12.5 KV, Wye)	3
a	Oil Circuit Breaker (FP-119)	12
k	Insulators - Pin Type (12.47KV)	2,974
	Insulators - Suspension Type (12.47 KV)	980
	<u>Line Hardware</u>	
b	Pole Top Pins (15")	2,637
f	Crossarm Pins (5/8" x 10½")	285
c	Machine Bolts (Galvanized, length 8" to 14")	9,412
q	Double Upset Bolt (Insulated)	104
i	Carriage Bolts, (3/8" x 4½")	500
j	Lag Screws (½" x 4")	278
n	Double Arm Bolts (5/8", 3/4", length 12" to 18")	147
o	Eye Bolts (5/8", length 8" to 16")	1,116
hs	Bolt (5/8", Single Upset, Insulated)	2,196
aa	Nut Eye (5/8")	190
d	Square Washers (2½")	12,299
	Square Washers (4")	1,053
r	Clevis (Secondary Deadend, Insulated)	338
bh	Clevis (Service Deadend, Insulated)	20
s	Clevis (Secondary Swinging)	500
as	Clevis (Service Swinging)	20
bo	Anchor Shackle	45
p	Connectors	7,077
ap	Hot Line Clamps	457
dc	Pole Bracket	42
h	Crossarm Braces	457
ac	Sidearm Braces	19

Item No.	Material	Quantity
ck	Anchor Rod Bonding Clamp	1,407
u	3 Bolt Clamp	3,050
v	Guy Attachment	1,034
bj	Guy Hook	816
bk	Guy Plate	816
x	Anchor Rods (5/8" x 7')	1,129
	Anchor Rods (3/4" x 8')	312
	Anchor Rods (3/4" x 8') Twin Eye	4
z	Patent Anchors (6,000#)	350
	Anchors - Rock	3
l	Deadend Clamp	564
ar	Wireholder	1,083
cf	Service Rack (3 Wire)	800
ai	Ground Rods (5/8" x 8')	660
aj	Ground Rod Clamp	660
bm	Guy Thimble	2
bp	8 d Nails	100 lbs.
al	Staples (Galvanized, 1½")	1,000 lbs.
m	Suspension Clamps	12
ab	Thimble Eye Nuts	80
ac	Thimble Eye Bolts (5/8")	81
at	Guy Guards	332
bl	Deadend Thimbles	12
ea	Deadend Assemblies (Primary)	433
ee	Deadend Assemblies (Secondary)	433
cd	Angle Assemblies (Primary)	45
ce	Angle Assemblies (Secondary)	45
cz	Splicing sleeves for Conductor listed	2,000

1 Ø Substations

KV	KVA
50/7.2	100
62.5/7.2	50
62.5/7.2	100

Number Substations

Platform or Pole	Number
1	1
1	1
2	3

Transformers

KV	KVA
50/7.2	100
62.5/7.2	50
62.5/7.2	100

2. Estimate of Materials Required for Farmstead Wiring:

1. CONDUCTOR - SINGLE

No. 6 Bare Copper, Medium Hard Drawn (Solid) M. Pounds	1.72
No. 6 Weatherproof Copper, Triple Braid, M. Pounds	20.15
No. 8 Weatherproof Copper, Triple Braid, M. Pounds	13.50
No. 6 DBRC Stranded Copper, M. Feet	54

2. CONDUCTOR - CABLE

No. 6 Three Conductor, SE Style U, Entrance Cable, M. Feet	30
No. 8/2 S. E. Style U, Entrance Cable, M. Feet	24
No. 14/2 R. C. Non-metallic Sheathed Cable, M. Feet	300
No. 14/3 R. C. Non-metallic Sheathed Cable, M. Feet	30
No. 12/2 R. C. Non-metallic Sheathed Cable, M. Feet	24

3. GROUNDING EQUIPMENT

Ground Rod, Copperweld ½" x 8' - 0". Units	2,400
Ground Rod, Copperweld 5/8" x 8' -0". Units	600
Ground Clamp (T&B No. GF 14 or Equal) Units	2,400

4. CONDUIT - STEEL

1¼" Steel Conduit, Galvanized or Sherardized M. Feet	10

5. CONDUIT AND CABLE FITTINGS

1¼" Pipe Straps, Units	1,800
Conduit Type Service Head, 1¼", 5 Hole, Units	600
Service Head, Cable Type 6/3 (T&B No. 5551 or Equal) Units	600
Service Head, Cable Type 8/2 (T&B No. 5550 or Equal) Units	2,400
Sill Plate, (T&B No. 2110 or Equal). Units	600
Cable Strap, (T&B No. 1341 or Equal). Units	1,800
Non-Weather tight connector (T&B No. 2009 or Equal). Units	600
Non-Weather tight connector (T&B No. 2006 or Equal). Units	2,400
Cable Clips, (T&B No. 91 or Equal). Pounds	300

6. SWITCHES AND CIRCUIT BREAKERS

Service Entrance Breaker Unit, 6 Circuit Heinmann or Equal. Units	600
Service Switch, 2 Cir., 3 Pole, 2 Blade (Colt #8393 or Equal). Units	1,200
Service Switch, 1 Cir., 2 Pole, 1 Blade (Colt #8283 or Equal). Units	1,200
Toggle Switches S/P (Bryant No. 3951 or Equal). Units	3,000
Toggle Switches 3P (Bryant No. 3953 or Equal). Units	1,200
Toggle Switches Plates, Bakelite Brown or Equal. Units	4,200

7. OUTLET BOXES AND FITTINGS

Outlet Boxes, 1½" x 4" Round, (National No. 2766G or Equal) Units	7,200
Bar Hanger, (National No. 2263-L or Equal).	7,200
Outlet Boxes, 1-3/4" x 2-3/4" x 3" (National #7G or equal) Units	7,800

8. RECEPTACLES

Duplex Receptables, Bryant No. 4832 or Equal. Units	3,600
Duplex Receptacle Plates, Bakelite Brown or Equal. Units	3,600
Range Receptacle (Bryant No. 3826 or Equal). Units	600

9. LAMPHOLDERS AND FIXTURES

Yard Light (Benjamin No. 11212 or Equal). Units	600
Lamp Holder Cover (Bryant No. H-288 or Equal). Units	3,000
Dust Tight Fixture with Reflector (100 Watt) Complete, Units	600
Fixture, Bedroom 2 or 3, Light Canopy Type, Units	1,200
Fixture, Kitchen, 1 Light Canopy Type Milk White Globe, Units	600
Fixture, Dining Room, 3 to 5 Light, Canopy or Chain Type, Units	600
Fixture, Living Room, 3 to 5 Light, Canopy Type, Units	600
Fixture, Porch Type, Ceiling or Canopy Type, Units	1,200

10. LINE HARDWARE AND INSULATORS

Wire Holders, (Pierce No. 1607 or Equal). Units	4,800
Service Racks, (Pierce No. 1376 or Equal). Units	600

11. TAPE

Rubber and Friction Tape or Duplex, Pounds	1,800

12. SOLDER

Solder (Wire, Half and Half). Pounds	600

13. SCREWS

Screws 1½", No. 12 R. H. Galvanized, Gross	50

14. FUSES AND FUSE ADAPTERS

Fuses, Type S, (Plug) 15 Ampere. Units	3,000
Fuses, Type S, (Plug) 20 Ampere. Units	600
Fuses, Type S, (Plug) 30 Ampere. Units	600
Fuses, Cartridge (Non Renewable) 10 Ampere. Units	600
Fuses, Cartridge (Non Renewable) 15 Ampere. Units	600
Fuses, Cartridge (Non Renewable) 20 Ampere. Units	600
Fuses, Cartridge (Non Renewable) 30 Ampere. Units	600

14. FUSES AND FUSE ADAPTERS - CONT'D

Type "S" Fuse Adapters (Edison Base).	Units.	(15 Ampere)	2,400
Type "S" Fuse Adapters (Edison Base).	Units.	(20 Ampere)	600
Type "S" Fuse Adapters (Edison Base).	Units.	(30 Ampere)	600

3. Estimate of Materials and Equipment for Farmstead Plumbing:

120	Pumps	Complete	with	fittings
30	Tubs	"	"	"
30	Lavatories	"	"	"
30	Closets	"	"	"
120	Sinks	"	"	"
30	Water heaters	"	"	"
30	Showers	"	"	"
120	2" cleanout ferrule			
120	1½" x 4" x 24" increaser			
900'	3" or 4" soil pipe			
30	stack base fitting with cleanout			
30	3" x 4" x 1½" or 4" x 4" x 1½" Tee			
30	4" x 16" closet bend			
30	4" x 2½" cast iron closet collar and bolts			
30	3" x 1½" or 4" x 1½" tapped sanitary cross			
30	"Y" branch 2" x 2"			
30	Spigot 2" x 1½"			
60	3" or 4" roof flashing			
1170#	caulking lead			
120#	oakum			
450'	punched hanger iron			
30	1½" black plug			
1050'	1½" Galvanized waste pipe			
2100'	1¼" Galvanized pipe			
13500'	3/4" Galvanized pipe			
5100'	1" Galvanized Pipe			
120	1½" black 45 degree ells			
180	1½" black 90 degree ells			
30	4 x 5 drum trap tapped 1½"			
150	1½" galv. close nipples			
90	1½" galv. short nipples			
90	1½" galv. long nipples			
1200	½" galv. water pipe			
33	½" galv. Tees			
60	½" black plugs			
120	½" black caps			
90	½" x 3/8 galv. 90 degree ells			
120	½" galv. close nipples			
360	½" galv. short nipples			
120	½" galv. long nipples			
600	½" galv. 90 degree ells			
60	3/8" galv. close nipples			
75	2½ cubic yards concrete			
7500'	4" drain tile			

4. Estimate of Equipment and Supplies Required for Line Maintenance and Office Management

A. For Line Maintenance

1. Trucks, trailers and equipment

Pole lifting spools	1
Tripods	1
Truck - 1 ton	1
Winch	1

2. Compressor - hand

Rock drills	12

3. Chains

Chains grinding and accessories	50 lbs.

4. Wire Handling

Hoist coffin - 3/4 ton	1
Cumalongs -	
1/0 or above	2
1/0 or smaller	2
Haven grips	4
Payout reel, portable	1
Ship auger 11/16" x 18"	2
Slack pullers	1
Wrenchers - connector sleeve for copper conductor 2-4-6-8	1 pr.

5. Clearing and trimming

Axes	4
Bush hooks	4
Saw - crosscut (2 man)	2
Saw - hand 30"	2
Saw tree trimming	2
Tree trimmer	1

6. Miscellaneous tools

Bench vise	1
Blow torch	1
Brace and bit set	2
Bolt cutters	1
Wood chisel 1"	2
Lineman's safety belt	2

6. Miscellaneous tools (Cont'd)

Climbers pairs	2
Splicing clamps	12
Folding rules	2
Ground rod driver	2
Hammers - claw and ball pein	8
Hammers sledge 6 lb.	1
Hammers sledge 12 lb.	1
Ladders extension 2-12' section	1
Meter sealer	1
Pliers	6
Saw hack and blades	2
Ax hand	2
Soldering iron	2
Tape 100'	2
Wrench log	2

7. Rope, block & tackle

Blocks snatch 5"	2
Blocks double for tackle	2
Blocks single sheave for hand line 3"	2
Rope for blocks & handline	50 lbs.

8. Hot line tools & equipment and protective equipment

Line hose 4' lengths	4
Grounding clusters	2
Bag for rubber gloves	2
Hot stick & attachments	2
Raincoats	2
Tarpaulins	2

9. First Aid Kit

First aid kits	4

10. Level hand 1

11. Meters

Indicating voltmeter portable	1
Recording voltmeter portable	1
Ground meter	1
Radio interference locator	1

12. Digging Tools

Anchor auger	2
Crow bars	4
Digging bars and spuds	4
Porthole digger	1
Picks	2
Shovels long handle	4
Shovels short handle	4
Spoons long handle	4
Tamping bars	6

13. Pole handling tools

Cant hook	2
Carrying hooks	4
Peavey	2
Jack pole pulling 5 ton	1
Pike poles 14'	6
Pike poles 16'	6
Pole gin	2

B. Office Equipment and Supplies

1. Mechanical equipment

Adding machine	1
Addressing machine	1
Calculator	1
Typewriter	1

2. Furniture

Book cases	1
Cabinets filing	2
Chairs executive	1
Chairs stenographer	1
Chairs plain	4
Desks executive	2
Table office	1

3. Office accessories

Extinguishers fire	4
Files visible	2

4. Stationary supplies

Binders acco	50
Binders ring	6
Binders post	4
Folders file	1,200
Paper drafting - roll	1
Paper mimeograph reams	100

12. Hedging tools

Hedge edger	2
Hedge lars	6
Hedging bars and spade	4
Pruning edger	1
Pick	3
Shovels long handle	4
Shovels short handle	4
Spoons long handle	2
Turfing bars	6

13. Pole handling tools

Cant hook	2
Carrying hooks	4
Peavey	2
Hook pole pulling 2 ton	1
Pike poles 14'	3
Pike poles 18'	2
Tule gin	2

E. Office equipment and supplies

1. Mechanical equipment

Adding machine	1
Addressing machine	1
Calculator	1
Typewriter	1

2. Furniture

Book cases	1
Cabinets filing	2
Chairs executive	1
Chairs stenographer	1
Chairs plain	4
Desks executive	2
Tables office	1

3. Office accessories

Extinguishers fire	4
Files visible	2

4. Stationery supplies

Binders ledge	50
Binders ring	6
Binders post	4
Folders file	1,200
Paper drafting - roll	1
Paper mimeograph reams	100